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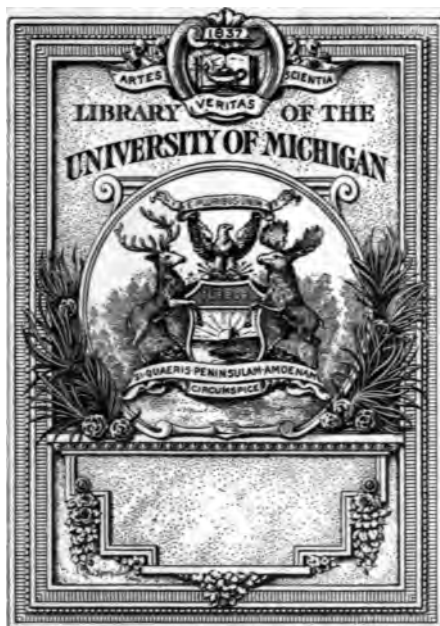
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**OVERCROWDED SCHOOLS AND  
THE PLATOON PLAN**

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**CLEVELAND EDUCATION SURVEY**

**OVERCROWDED  
SCHOOLS AND THE  
PLATOON PLAN**

**BY**

**SHATTUCK O. HARTWELL**

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**THE SURVEY COMMITTEE OF THE  
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## FOREWORD

This report on "Overcrowded Schools and the Platoon Plan" is one of the 25 sections of the report of the Education Survey of Cleveland conducted by the Survey Committee of the Cleveland Foundation in 1915. Twenty-three of these sections will be published as separate monographs. In addition there will be a larger volume giving a summary of the findings and recommendations relating to the regular work of the public schools, and a second similar volume giving the summary of those sections relating to industrial education. Copies of all these publications may be obtained from the Cleveland Foundation. They may also be obtained from the Division of Education of the Russell Sage Foundation, New York City. A complete list will be found in the back of this volume, together with prices.



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# OVERCROWDED SCHOOLS AND THE PLATOON PLAN

## CHAPTER I

### ECONOMICAL USE OF BUILDING SPACE

Next to better teaching, the most important demand of schools is better housing. Relatively it falls as heavily upon the small community as upon larger towns and cities. The erection in rural districts of a two or three room school-house, where only a one room structure stood before, is often as real a civic problem as the building of a half-million dollar high school in a city of the size of Cleveland. But in small places the problem is occasional; in growing cities it is constant and insistent. It arises alike from the rapid increase of population, which taxes all school facilities, and from the shifting of residential centers within the growing city. Both of these conditions are familiar ones in the school history and present school situation of Cleveland.

Every year several new buildings are opened,

but each year finds the needs unfilled. For several years past, Cleveland has been spending nearly a million dollars a year for new buildings, new equipment, and land, but the number of pupils has continued to increase more rapidly than the available accommodations. The Superintendent's report, published in January, 1915, shows that for the two school years just preceding there was a total increase in enrollment of 11,438. This increase would require for proper housing a dozen good-sized buildings. It is equivalent to the entire enrollment in a city of from 65,000 to 75,000 inhabitants.

A special report on housing conditions, dated February 12, 1915, states that 71 portables, eight ground-floor rooms, and 39 rented rooms were then in use for regular classes. Besides these there were 64 "relay schools," or 32 rooms which by shifting of the time-schedule accommodated twice that number of classes. In addition there were 36 classes reciting in auditoriums. Thus in February of 1915 Cleveland was behind its actual building needs by about 186 rooms. On the basis of 40 pupils in a room, practically 7,500 pupils were in temporary quarters of a more or less unsatisfactory sort.

In Cleveland, as in other cities, the added attention given to the problems of retardation and elimination in the past few years has re-

sulted in keeping children in school longer and hence in a still further increased demand for housing accommodations. Here, as elsewhere, the enrollment in grades six to eight is much greater in proportion to that in the lower grades than it was a few years ago. In Ohio the recent extension of the compulsory attendance period has made this factor especially important. It is estimated that in Cleveland this new legislation has increased the number of 14 and 15 year old children in the public schools by nearly 2,000. It would require two large buildings costing almost \$400,000 to accommodate these children alone.

Until within a few years, the method of attacking this problem of housing has been through increasing the number of available classrooms. Temporary movable buildings have been provided to house an overflow enrollment until time and means could be secured to erect permanent modern buildings suited to the expanding needs of increased attendance. Recently, however, the application of modern critical methods of study to problems of public school administration has resulted in several experiments in school housing which approach the difficulties from new viewpoints. These newest methods for administering school accommodations undertake to secure a better adjustment of



the school building to the school curriculum through a more intensive use of the school plant.

### **PART-TIME PLANS**

Under conventional methods of school administration, a given classroom is the "home room" of one class. Each pupil has an individual seat and desk which is not used by any other pupil. When the pupils are on the playground, in the shops, in the auditorium, or in the gymnasium, the classroom is vacant. In recent years several methods have been developed whereby two groups of children use one classroom.

The commonest arrangement, in use in many cities, is to lengthen out the school day so as to have two groups of children with different teachers accommodated in one room. If the room is in use from eight in the morning until four in the afternoon, two groups of children may thus each have four hours of teaching. This form of part-time plan is recognized as being merely a temporary makeshift employed to relieve overcrowding until such time as new buildings may be erected. There are many modifications of this plan, in some cases providing for two short sessions for each class each day in the same room, instead of one long session.

Another type of part-time plan is the one

employed in the high school of Fitchburg, Mass., in the co-operative courses of the University of Cincinnati, and in similar courses in other cities, in which two groups of pupils alternate between school work and shop work. Under these plans a class occupies a classroom and does regular school work for one week, while a corresponding number of pupils work in an industrial establishment. At the end of the week the two classes change places so that those who have been working in the factory occupy the classroom in the school, while those who have been in the school take the places of the other group in the factory. These arrangements were undertaken as improvements in the curriculum, but they have had, nevertheless, important bearings on the methods of administering the space of school buildings, for they have suggested to school executives other methods by which one classroom may be made to accommodate two groups of pupils.

Probably the most notable experiment affecting the use of building space, certainly the one most discussed, is the plan, or rather the program of innovations, instituted by Superintendent Wirt at Gary, Ind. To regard it simply as a way of increasing use and capacity of school buildings would be unfair to the Gary plan. The unique conditions at Gary which required a

school system to be produced at once, without any previous local traditions to follow or to overcome, gave unusual chance for the initiative that Mr. Wirt has shown. In fact Mr. Wirt was not only unhampered by local traditions: he freed himself from the general traditions as well. His attempt to determine and meet the individual needs of many differing classes of pupils has brought a series of striking changes from the usual curriculum and the customary teaching methods. His influence on educational procedure is certainly one to be reckoned with. But one of the important claims of the Gary plan is increased efficiency in the use of buildings. That feature of Mr. Wirt's work has a direct application to the subject in hand.

#### **THE GARY PLAN FOR USING SCHOOL FACILITIES**

The main difficulty in the way of getting a clear-cut understanding of the Gary plan for utilizing school buildings is that it is not a single plan but rather a combination of five varying factors. These five factors may be stated as follows:

1. Shops, gymnasiums, and an auditorium are added to the school building; playgrounds and school gardens are provided outside.

2. Through administrative readjustments all special rooms as well as all classrooms are used throughout the school day.
3. Several classes are accommodated simultaneously in auditoriums and gymnasiums.
4. Different groups of children come to school at different hours.
5. Libraries, churches, the Y. M. C. A., etc., are allied with the schools to the extent of caring for part of the children part of the time.

Now of these factors the first is the only one involving extra building space. If one attempts to enlarge the numerical capacity of a schoolhouse through furnishing additional rooms or ground space, it is clear that no financial saving will result unless other readjustments are also made. This becomes evident if we consider the simplest form of school unit, which is the one-room schoolhouse. If we wish to double the capacity of such a school plant without building an additional classroom, we may do it by adding to the original building a manual training shop for the boys and a domestic science room for the girls. We may then have one group of pupils in the schoolroom and another group of equal size divided between the two shops, and we may have these two groups occupy the classroom and the shops alternately so that all of the space will

be used all of the time. However, this arrangement will not result in any financial saving, for the per capita expense of space in the shops will be even greater than that of space in the classroom.

Financial savings may be effected through employing any or all of the methods listed above under Numbers 2, 3, 4, and 5. It is clear, for example, that the capacity of the building will be increased if we can accommodate one class in each special room at the same time that we have one class in each regular room as indicated by method Number 2.

Method Number 3 is to accommodate several classes simultaneously in the larger special rooms, such as the gymnasiums and the auditoriums. The same thing may be done in the playgrounds. In most modern buildings the auditoriums and gymnasiums are so large that it would be physically possible to accommodate half a dozen classes at once in each of them. This method of effecting economies is dependent on the possibility of providing general exercises of varied form and educational value for these large groups. If there were no such limitations, it would be quite possible to double the capacity of some schoolhouses by this simple device alone.

Method Number 4 consists of having different groups of children come to school at different

hours. Here again it is clear that by the use of this device alone it would be possible to double the capacity of any schoolhouse. Indeed this is being done regularly in many communities where the familiar forms of part-time plans are in force. All that is necessary to double the capacity of a schoolhouse by this method is to have the building filled to capacity by one group of children during the first half of the day and by a second group of equal size during the latter half of the day.

Method Number 5 is to secure the co-operation of libraries, churches, the Y. M. C. A., and other agencies to the extent of getting them to care for part of the children during part of the time. Here again it is clear that the extent to which schoolroom capacity may be increased by the use of this method depends entirely on the amount of such co-operation that can be secured. If these agencies will take care of half of the children, while the schools take care of the other half, the capacity of the school plant can by this method be doubled.

To combine all these factors to their limits would be a mathematical pastime, but a task distinctly unpedagogical. The moment we test these procedures for their educational values, each one becomes a variable. This has been true at Gary. The variables have been differ-

ently combined at different times. They have, too, quite naturally, impressed various observers differently, even at the same time. This is one reason for the widely differing reports that have been made regarding both the extent and means of increasing building accommodations at Gary.

Now each of the variables named above may yield educational advantages under some circumstances. But for most of them these advantages are considerably less than their mathematical possibilities especially when, as will frequently happen, they run athwart local prejudices and traditions. In our judgment the factor of most value at Gary educationally, and most productive when used under other conditions, is the one listed as Number 2 above. This consists of administrative readjustments through which all special rooms as well as all classrooms are used throughout the school day. This is secured through the use of "The Platoon Plan" which is described in the following chapter.

## CHAPTER II

### THE PLATOON PLAN

✓ The platoon plan is a form of school administration in which the children are divided into two groups made up of equal numbers of classes. During the first half of the morning session one group of classes is engaged in regular work in the regular classrooms, while the second group is engaged in special work in special classrooms and in the auditorium, gymnasium, playground, etc. At the mid-point of the morning session the two groups change places, those who have been in the regular rooms going to the special ones and those who have been doing special work going to the regular rooms to take up regular class work. In the afternoon a similar shift is made.

Thus a given teacher is charged with the care and instruction, in regular lines of work, of two groups of pupils instead of one. To offset this added burden and responsibility, the teacher is relieved of work in the special subjects, such as music and physical training, which demand for best results not only special preparation but a



special form of interest. These subjects are entrusted to teachers who have this interest and training and who now find their whole school day filled with the instruction of several grades in their particular subjects.

Let us suppose that we are to install the platoon plan in a 10 room elementary school having an auditorium and a gymnasium. Two of the rooms are occupied by first grades, and here we shall leave the work unchanged. We now have the eight regular classrooms, the auditorium, and the gymnasium at our disposal. We convert three of the regular classrooms into special rooms with equipment for work in such subjects as music, drawing, nature study, and the like. This gives us five regular rooms and five special rooms and only eight classes to occupy them. We may now enroll new children in sufficient numbers to fill two more classrooms. When our whole school above the first grade has been organized in two platoons which alternate in the use of the regular rooms and the special rooms, we find that we are accommodating 12 classes of pupils in a 10 room building. We have effected a direct economy amounting to 20 per cent.

While the foregoing description illustrates the fundamental idea of the platoon plan, it is found in practice that many minor modifications im-

prove the results secured. In pleasant weather playgrounds are used instead of gymnasiums. In buildings having two playrooms or two gymnasiums the boys are given physical training work in one room and the girls in the other room during the same period. Other readjustments are made if the special rooms in the building include such accommodations as those for manual training, domestic science, etc. Still further savings may be made if it is considered desirable to accommodate two classes simultaneously in the auditorium, in the gymnasium, or on the playground.

The platoon plan is then a readjustment in the relation of building and equipment to curriculum. It aims to secure:

1. Better instruction and improved results in special branches without increased expense and without sacrificing the regular subjects of the curriculum.
2. The filling of important gaps in the present curriculum without the increase in cost that often prohibits such additions.
3. A more constant use of the whole school building and especially increased use of facilities usually considered "extras," such as auditoriums, gymnasiums, manual training rooms, and the like.
4. A larger enrollment within the same building.

The method used to meet these various aims involves changes and readjustments as follows:

A slight readjustment of the teaching force.

Some change of emphasis on teaching values.

Rearrangement of special work, such as music, drawing, and physical training.

A modified form of departmental teaching.

Devices and equipment to secure a more flexible use of schoolrooms.

Rearrangement of the daily time-schedule.

The platoon plan is easily modified to meet local conditions. It can be established through all the primary and grammar grades, or can be equally well combined with a junior high school plan. The system now in force throughout the schools of Kalamazoo, Michigan, is the one best known to the writer and is the one here used for illustration. In that city the plan was first undertaken in grades one to seven and is now used in grades two to six. The completion of a new high school building has made possible the transfer of all 10th grade pupils to the Central High School as well as the changing of three departmental schools into junior high schools which now accommodate grades seven, eight, and nine.

Various experiments have been made in the first grade. Without detailing them the writer would record his personal opinion that when this

grade continues to some extent the principles and methods of the kindergarten it may wisely be left outside the platoon plan. When, however, first grade children are at once introduced to more formal school methods, the platoon plan relieves the routine and does not prove confusing. When crowded conditions require the use of devices like the relay school, the platoon method of dividing the day's activities will give the children better care and oversight.

Perhaps the best way to make clear just how the platoon plan works will be to follow its operations in a given school. Its essential points are:

Two groups of pupils per teacher for regular work.

Special teachers for special subjects.

Rearrangement of daily time-schedule.

Rearrangement of rooms and equipment.

#### A TYPICAL SCHOOL BEFORE REORGANIZATION

In this particular school the former curriculum included music, drawing and construction work, and physical training,—all taught by the grade teachers under the direction of special supervisors for each subject. The supervisors or their assistants visited each room once in three weeks. Manual training was taught in the upper grades

by special teachers who came to the building once a week to instruct grades five and six in knife work and sewing. Grades seven and eight were grouped under a departmental plan. The school day of two sessions was four hours for grade one, four and three-quarters hours for grade two, and five hours for the rest of the school. Except in stormy weather all grades below the departmental ones had morning and afternoon recesses of 15 minutes each. Rooms were seated for from 40 to 48 pupils, while enrollment varied from 30 to 45 pupils to the room.

Each semester the classes were rearranged and in many rooms the enrollment was divided between the two parts of the same grade or adjacent divisions of different grades. Occasionally a half grade had a room to itself but more often the grades were divided the other way. The building had two basement playrooms and a good playground, but the playrooms were seldom used except by privileged groups for a short time after school. The playground was quiet except at recess and before sessions.

This description fits the general situation in many schools throughout the country. It was a typical grade school situation with no departmental or specialized instruction below the seventh grade. Each room was a separate "home room" with a single teacher. Yet two or three

features that were bothersome and seemed wasteful of energy became forcibly impressed upon the superintendent.

In the first place there were several good teachers, but only one of them was entirely satisfactory to all the supervisors of special subjects and she was rapidly "going stale" from too close attention to the daily routine. One of the teachers objected with some reason to the special music lessons she had to take in the vain effort to correct her tone sense. This she almost utterly lacked and could not acquire. A number of the teachers were perfunctory in their efforts to meet the demands of the course in physical training. Results in this work were better than nothing, but not much better. For at least one teacher, Monday was apt to be blue Monday and she was likely to mix her paints with tears.

The time of each teacher was divided into small fractions with some meager results even when intentions were of the best. Different portions of time and work were subject to supervision by different people and thus attention was scattered and the time-demands for preparation, teachers' meetings in special departments, and so on, were often unduly increased. Analysis of the weekly time schedule showed that the amount of time assigned to special

subjects was very considerable. In grade three, for example, out of 1450 minutes weekly, 150 minutes were given to recess and 320 more to music, drawing, construction, physical training and physiology. In grades five and six, with a day 10 minutes longer, there was the same time allowance for these special subjects and in addition manual training had 90 minutes each week. Thus nearly one-third of the time in the lower grades and more than one-third of it in the upper ones was spent in auxiliary activities without satisfactory results and without efficient conservation of the effort and energy of the teachers.

### THE REORGANIZED SCHOOL

) At this time a visit to Gary showed how an ingenious method had increased the working value of that school plant and had at the same time accomplished at least one other thing of large importance, namely the securing of a well-arranged and adequately supervised course in physical training for all grades with regular use of the playgrounds. A study of the work led to the conclusion that experimentation along similar lines would be wise and that the supposed dangers of the too early application of a semi-departmental plan of work were probably no

greater than some of the difficulties that beset the ordinary method.

As a result, the platoon plan was instituted by the author in Kalamazoo, first as an experiment in one school, then in three, and finally as the city's method of organization below the junior high school which had been assuming shape through the same years. The new program of the school, of which the former program has just been described, will serve to show how the platoon plan works.

The morning session is divided into six half-hour periods with five minutes allowed at the opening of school for recording attendance. In this building every room, including the play-room, has a group present at 8:40 for roll-call. In the building are a kindergarten and a first grade room which follow individual programs. Then there are 10 classes arranged in pairs which have all their regular work,—reading, geography, arithmetic, etc.,—in five rooms under five teachers. Each of these teachers has charge of all the classroom work of two groups in these regular subjects. Three rooms previously used as grade rooms are now given up to special or supplementary use. Two are equipped with 45 desks each, three different sizes being used in each room. The third room has 35 movable chairs of two sizes and with tablet arms so that



written lessons can be given. In addition this room has 15 low chairs for the smaller children of the primary grades. This is the literature room.

One of the other rooms is used for penmanship and nature study on alternate days and accommodates also the fifth and sixth grade sewing classes once a week. The third room is used in the same way for music and drawing. When work is being given to a class in music the drawing teacher is busy at another building.

Let us call the advanced half of each pair of rooms or groups the *A* classes, and the other half the *B* classes. At 8:45 the *A* classes begin in their regular rooms an hour and a half of work and recitation under their regular teachers. Most of them met there for roll-call and remained when the other groups began in the special rooms. In the regular rooms the usual method of class work still governs. If the class has the usual number, of from 30 to 40 pupils, some recitations are undertaken in one group but in other subjects the pupils are arranged in two divisions, one division studying while the other recites.

At first thought the limiting of regular classes to half of the time of each session and the possible breaking of the group into two recitation

divisions would seem to entail a heavy deduction from the customary time-allotment. In practice this does not prove to be the case, for some of the work hitherto classed as regular is transferred to the special rooms and hence to the special time-allotment. Besides, the time-allotment of the course of study for arithmetic or reading usually covers all the time given in that room to those subjects. Since, in most school systems, a class of over 30 pupils usually has two divisions, each pupil really has far less actual teaching time in most of the subjects than the course of study and time-allotment indicate. Hence comparison of the old and new assignments of time for the regular subjects shows surprisingly slight changes. For this reason the paired groups may sometimes include pupils of three half-grades, without loss to the children or an over-tax of the teacher. All superintendents and principals know how often numbers in certain grades will make one class small while the next is crowded. So far as numbers modify arrangement, the new method is practically as flexible as the former one.

At 8:45 two of the *B* groups go to the playground if the weather is pleasant or stay in the playrooms if it is inclement. They make some noise but unless the playroom is badly located the noise does not disturb the children in the

other parts of the building. Two more of the *B* groups go to the special teachers of music and penmanship in their special rooms, and the fifth group goes to the literature room. Here this class undertakes reading, dramatization, study of poetry, or story telling, under the direction of a teacher selected for her ability in the literary and interpretative side of reading.

In this school there are two instructors in physical training during the morning session. One looks after the games and exercise of the girls from two rooms while the other has charge of the boys from two rooms. In the afternoon, by a slight shifting of program, one instructor is sufficient and the other goes to another building for the half day.

At 9:15, and again at 9:45, the *B* groups shift rooms and activities. The *A* groups remain in their rooms until 10:15 when the *A* groups and *B* groups change places. Then all the *B* groups settle in the regular rooms for the rest of the forenoon and the *A* groups take up their special classes, changing each half hour.

The afternoon program is similarly arranged in four half-hour periods. Each group has five periods in regular rooms and five in special rooms each day. All classes below the fifth grade have one period in each session in the gymnasium or on the playground. Supervised

play takes up the greater portion of the time. These periods supercede the recesses of the old plan. The fifth and sixth grades usually have but one period a day on the playground. Their schedule has to provide for an hour and a half of manual training once a week and hence exact alternations are broken up. Each group has literature every day and music, drawing, and penmanship every other day, or at least the equivalent of this in a program covering a two weeks cycle.

Thus eight classrooms with the playrooms or playground accommodate 10 classes of children. In this way the school accommodates two extra classes. This is partly because there are suitable playrooms in the basement for use in bad weather. Ten groups thus administered need 10 teachers. If the playrooms are large and two classes are cared for simultaneously in each playroom, the total number of added classes accommodated in this building becomes four instead of two.

With a five hour day the maximum number of groups that can be cared for in one set of special rooms is 10 when all the special subjects are carried through the day in single classes with half-hour periods. Twelve groups may be cared for with the same total number of rooms if some classes are doubled, for by this method six

double groups may be cared for during the six half-hour periods of the forenoon and six in the four half-hour periods of the afternoon.

These calculations are based on special work comprising classes in five subjects such as music, drawing, writing, literature, and play. On this basis the platoon plan will be found most economical of building space when there are five, six, 10, or 12 double groups in the school. If, however, the building has accommodations for other sorts of special work, such as domestic science, manual training, laboratory, or library work, these multiples will not necessarily hold for all special groups.

Building space, however, and the time of special teachers in alternating subjects, like music and drawing, or penmanship and nature study, will be used most economically by holding the basal organization of double groups on these multiples, so long as the number of periods in the school day is unchanged.

## CHAPTER III

### PROBLEMS OF ORGANIZATION

Local conditions will determine how far down in the grades it is wise to carry the platoon plan. In places now using the system, observers who are practically unanimous as to its advantages for the middle and upper grades are divided in opinion as to the wisdom of applying it to the first grade. Naturally the further it is carried, the larger will be the saving of room, so long as expensive fractions above the ten-group or twelve-group arrangement are avoided. But mere economy of room ought not to be the criterion.

A few first grade rooms, conducted on the new plan, have shown that the first grade pupils accomplish as good work as before, but the transition from kindergarten to the new plan is rather abrupt. The new plan may well be used, however, in crowded buildings where two first grades are using one room. It secures an amount of instruction time equal to that given under the old arrangement, and gives besides the chance for supervised play and outdoor exercise.

Whatever grade limits are established, the essentials of organization are those already indicated:

1. Each regular teacher instructs two groups in the regular subjects, thus being responsible for the work of from 70 to 80 pupils in the fundamental branches, but being relieved from responsibility for the auxiliary subjects.

2. Five half-hour periods each day are spent by each class in special lines of work under special teachers. These usually include art, music, physical training, literature, and one or two others chosen according to local conditions, from among penmanship, nature study, manual training, agriculture, library work, and the like.

The two groups under a regular teacher may be called Group *A* and Group *B* and are cared for in one regular room. It is thus clear that if each group spends half of the time in the regular room, it must be cared for in other parts of the school plant during the other half of the day.

The special teachers are selected because of special training or qualifications and the instructors in a given subject are under the direction of the supervisor of that department. The art teachers, for example, form a group under the supervisor of art. The same is true of music, of physical training, of manual training, etc. In Kalamazoo the specific plan for art and music

provides a two-day schedule with these subjects alternating for a given class.

One period in each session is given to physical training for grades through the fourth, and one period a day to physical training for grades five and six, with the other period left free as a study period. In one building penmanship and nature study alternate. This experiment has been successful and there is shown a possibility of developing nature study and elementary science in this way when competent teachers can be secured.

#### LENGTH AND ARRANGEMENT OF DAY

Experience has shown that the half-hour unit for special classes is better than the plan of allowing 45 minutes or an hour. In Kalamazoo the first three afternoon periods have been lengthened to 35 minutes each in the belief that 35 minutes in the afternoon are no more than equivalent in value to 30 minutes in the forenoon. These 35 minutes include time for the passing of classes. To this extent (15 minutes) the school day has been lengthened at Kalamazoo. But the lengthening of the day is not essential to the successful working of the plan and the exact length of periods is not very important. Adjustment to a local time-schedule



is a matter of manipulation. In general the 10 or the 12 half-hour day will be found best. The daily allotment of time to the various subjects varies from grade to grade. For illustration the accompanying daily time-schedule for grades five and six may be considered.

#### DAILY TIME-SCHEDULE FOR GRADES FIVE AND SIX

<i>Regular 150 Minutes</i>	
Geography	30 minutes
Arithmetic	30 "
Language	30 "
Reading (basic) and history alternating	35 "
Spelling	25 "
<i>Special 150 Minutes</i>	
Music or art	30 "
Physical training and physiology	30 "
Literature including supplementary reading	30 "
Pennmanship including written lessons	30 "
Study assigned and supervised	30 "

Manual training usually takes one half-session per week from regular grade work. This time may be taken from literature, physical training, or study, but not from music or art. Hence the weekly total of time as assigned above would be reduced in either the regular or special groups of studies by the 90 minutes given to manual training. It will be seen from the time-schedule that the old-fashioned recesses are discarded. The allotment of time for four of the grades under the old plan and the new is shown in the time-schedules for grades three and four and for grades five and six presented on page 37.

**WEEKLY TIME-SCHEDULE FOR GRADES THREE AND FOUR IN  
KALAMAZOO**

	New	Old
Geography and nature study	100	100
Literature	150	80
Reading	150	250
Phonics and spelling	150	200
Language	150	150
Penmanship	100	100
Arithmetic	125	125
Art and construction work	75	150
Music	75	75
Physical training	270	75
Physiology	30	20
Recess	..	150
Passing of classes and basement recess	50	..
Study hours	150	..
Opening exercises	..	25
<b>Total</b>	<b>1,575</b>	<b>1,500</b>

**WEEKLY TIME-SCHEDULE FOR GRADES FIVE AND SIX IN  
KALAMAZOO**

	New	Old
Art	75	75
Manual training	90	75
Literature	150	90
Reading	90	125
Language	150	175
History	90	90
Geography	150	150
Spelling and dictionary work	125	125
Penmanship	75	75
Arithmetic	150	150
Music	80	100
Physical training	120	75
Physiology	30	25
Recess	..	150
Passing of classes and basement recess	50	..
Study hours	150	..
Opening exercises	..	20
<b>Total</b>	<b>1,575</b>	<b>1,500</b>

Under the new time-allotments, the assignments for the fundamental subjects and the auxiliary ones are not greatly changed. The rearrangement of time for reading places some of that work under the special heading of literature. The time for physical training is considerably increased and made more valuable through special instruction and through the use of the playground. The time for music and art remains either the same or is slightly decreased. But the results from the instruction by special teachers show distinct improvement in quality and amount of work done.

On pages 39 and 40 are schedules showing the standard time-allotment in Cleveland and the time-allotment adopted for the schools in which the platoon plan was tried in the fall of 1915. An examination of these schedules will show that the time given to the fundamental subjects and to the auxiliary ones under the standard time-allotment and under the platoon plan was as follows:

	Grade						
	2	3	4	5	6	7	8
Minutes per week to fundamental subjects under standard plan	1,065	1,090	1,115	1,080	1,080	1,040	1,040
Minutes per week to fundamental subjects under platoon plan	1,050	1,050	1,140	1,110	1,110	1,080	1,080
Minutes per week to auxiliary subjects under standard plan	385	360	360	395	395	435	435
Minutes per week to auxiliary subjects under platoon plan	450	450	360	390	390	420	420

It may seem that the new time arrangement emphasizes the auxiliary subjects and reduces the allotment for the fundamental studies. The actual redistribution is in reality slight since work previously classed as regular is in the new plan transferred to the special group although the nature of the work remains unchanged.

WEEKLY TIME-SCHEDULE IN MINUTES PER WEEK FOR ALL GRADES IN CLEVELAND FOR REGULAR AND SPECIAL SUBJECTS ACCORDING TO PRESENT PRESCRIBED COURSE

Fundamental subjects	Grade							
	1	2	3	4	5	6	7	8
Reading	500	500	440	310	255	215	240	240
Spelling	75	100	125	100	80	75	75	75
Language, composition, and grammar	125	150	125	165	190	190	200	200
Writing	75	100	100	100	90	75	75	50
Arithmetic	60	215	225	240	225	245	225	250
History	..	..	30	40	40	80	135	135
Geography	..	..	45	160	200	200	90	90
Total	835	1,065	1,090	1,115	1,080	1,080	1,040	1,040
Auxiliary subjects								
Music	75	85	85	85	80	80	80	80
Drawing	75	75	75	75	90	90	90	90
Manual training	50	50	50	50	60	60	100	100
Physical training	15	15	15	15	30	30	30	30
Recess	..	75	75	75	75	75	75	75
Total	315	385	360	360	395	395	435	435
Grand total	1,150	1,450	1,450	1,475	1,475	1,475	1,475	1,475
Per cent fundamental	73	73	75	76	73	73	70	70
Per cent auxiliary	27	27	25	24	27	27	30	30

**WEEKLY TIME-SCHEDULE IN MINUTES PER WEEK FOR ALL GRADES IN CLEVELAND FOR REGULAR AND SPECIAL SUBJECTS ACCORDING TO PROPOSED PLATOON PLAN**

Subjects in regular rooms	Grade						
	2	3	4	5	6	7	8
Reading	330	300	180	145	105	150	150
Spelling	90	105	90	90	75	75	75
Language, composition, and grammar	120	115	150	150	150	140	140
Arithmetic	210	200	240	230	240	240	240
History	..	30	60	45	90	145	145
Geography	..	..	30	90	90	..	..
Total	750	750	750	750	750	750	750
Subjects in special rooms							
Literature and supplementary reading*	150	150	150	150	150	150	150
Writing*	90	90	90	90	90	90	90
Nature study and geography*	60	60	150	120	120	90	90
Music	75	75	75	75	75	75	75
Drawing	75	75	75	75	75	75	75
Physical training, physiology, and recess	300	300	210	180	180	180	180
Manual training and domestic science	..	..	..	60	60	90	90
Total	750	750	750	750	750	750	750
Grand total	1,500	1,500	1,500	1,500	1,500	1,500	1,500
Per cent fundamental	70	70	70	69	69	70	70
Per cent auxiliary	30	30	30	31	31	30	30

\* Fundamental subject transferred to special room

The platoon plan readjusts time divisions with apparent advantage to both pupils and teachers. In practice the day proves more full of variety and the work does not become tedious. The breaks in the customary routine and the re-

laxation gained through exercise help rather than hinder. In the regular rooms the teacher concentrates her efforts more effectively for she has fewer subjects. This has proved so important to the teachers that the slight increase in the length of the day has evoked little criticism. Since the range of demand on the teacher's resources is reduced, worry is lessened. Many good teachers who were formerly troubled over their lack of skill in such special subjects as music and drawing are now able to show good results from steady effort in the lines for which their equipment has best prepared them. The same is true of other teachers who did not worry under the former arrangement but who skipped the things they could not easily do. ✓

### SUPERVISION

The new plan renders supervision more effective. In a school system which had, under the old plan, 100 teachers conducting music classes which must all be visited by the supervisor, 10 special teachers should easily carry the entire grade work in music. As these teachers have special preparation and are concentrating their efforts, they can be brought together frequently for consultation and less of the supervisor's time is needed to inspect their class work. Hence in a

small system a supervisor under the new plan can teach part of the time. In larger places one or more assistant supervisors might be dispensed with. Supervision under the new plan is more effective and less expensive.

General supervision of regular teachers is not reduced in amount, but it is rendered easier since the programs of regular work are uninterrupted by the special work and by the visits of the supervisors of special subjects. Moreover, each teacher is relieved from the multiplicity of meetings and the requirements involved when each is responsible for the work of her grade in all the lines of regular and special work.

## CHAPTER IV

### PROBLEMS OF ADMINISTRATION

Before the platoon plan is put into operation, careful provision must be made to take care of a number of small but important details, for if they are neglected, the petty worries of the first few months are apt to obscure the real merits of the plan. Several matters must be provided for before any change is made in the manner of administering the school. The first requisite is to have some place for each class during each period. If the classes are arranged in pairs so that two use each regular grade room during the day, there must be another place free each period for the group not in the regular room. If there are five classes on the platoon plan in the regular classrooms, there must be at least three other rooms besides a playground or a gymnasium or a large playroom. Under favorable circumstances, two play groups may frequently be cared for in one place either indoors or outdoors although they will often require two teachers, one to take the boys of two groups while the



other has charge of the girls of the same two groups.

#### EQUIPMENT OF SPECIAL ROOMS

Much petty difficulty will be avoided if the equipment of special rooms is carefully worked out beforehand. Mention has already been made of the arrangement of desks in special rooms. Ample storage space in these rooms will prove helpful in the handling of classes. For instance, in the music room one set of music books for each grade can be provided and it will then be unnecessary for each pupil to be provided with an individual book. Shelf room or pigeon-holes should be provided in the art room for the systematic storage of individual material, class by class.

In some cases it has been found possible to effect a saving in material and in time by supplying a set of paints, crayons, etc., for each desk in the art room and charging each pupil a small amount for their use. In practice it has been found that 20 cents a year from each pupil (10 cents a semester) covered the cost of these supplies, whereas formerly most pupils bought sets of paints and brushes each year at a cost of 25 cents, and in addition had to purchase crayons and some extra paints.

In the literature room most of the supple-

mentary reading can be concentrated if good bookcases are provided. Where this is done, the saving in wear on books, as well as in the number of sets needed, will be appreciable.

### STORAGE OF PUPILS' BOOKS

Another important matter is provision for taking care of the books and stationery of the pupils. As two groups are accommodated in one room, some provision must be made for storing two sets of books. It is not practicable to do this in one desk. In Kalamazoo, several rooms have been equipped with galvanized iron boxes of sufficient size to accommodate a pupil's set of books. These boxes are kept in racks along the wall. Sometimes the pupils are sent to the racks to get their books when they need to use them. In other cases teachers prefer to have the pupils take their boxes of books to the desks with them. These details can be variously worked out, but failure to make satisfactory provision for storing books is sure to result in losses and to bring serious objections against the whole plan at the beginning.

If 40 or 48 is taken as the unit for extra equipment of this sort, it is economical to have the racks for these boxes made in half units. Such half-racks are easily moved and a smaller supply

will suffice for several rooms. For example, if two groups numbering together 70 pupils are assigned to one room having 48 desks, it will be found that an equipment of 24 book boxes fitting into a half-unit rack will meet the requirements of that room for the term.

### WARDROBES

The care of wraps is also important, but in most buildings it may be arranged without installing much extra equipment. In older buildings many wardrobes are large enough to hold the wraps of two groups. In most buildings two wardrobes can easily accommodate the wraps of three groups. Where these arrangements are not practicable, lockers or movable racks can sometimes be provided in the halls. Accessibility is important since trips to and from the playground involve getting wraps from wardrobes and putting them back.

### FURNITURE

Recent improvements in movable furniture help in the problem of equipping special rooms. Heavy desks or chairs of the Moulthrop type are available for the art room, though fixed chairs and desks are usually preferable. Lighter movable chairs are desirable for the literature room

and also for the music room when that is separate. In general movable furniture of at least two sizes in two or three rooms will be found helpful in conducting the special work and of great advantage when the rooms are used for clubs and other meetings in the evening. Where fixed seats and desks are used an equipment of 48 divided among numbers 2, 3, 4, and 5 gives good accommodations, although it gives the room a somewhat irregular appearance.

### SIGNAL SYSTEM

Still another necessity is a good automatic signal system for the special rooms. As pupils move to and from the regular rooms only once in the middle of each session, the usual building signals will do for these rooms. A complete set of automatic signals for all rooms is better.

### COST OF SPECIAL EQUIPMENT

All these equipment needs should be met beforehand. They involve a substantial first cost in a good-sized building; yet it is a cost much below that of the construction of a single room. Liberal provision for the change to the new plan will seldom amount to \$1000 per building. The cost of each new classroom is from four to 10 times that amount. This consideration ought to

help in securing first-class equipment rather than relying on makeshift devices. After the changes have been made, the displaced furniture of the regular sort will be available for use in other buildings.

#### RECORDING ATTENDANCE

One of the first problems to meet and solve is the distribution of responsibility for keeping the attendance and other records of the double groups. Two plans are practicable. In the first place, reports, enrollment, and records for both groups may be taken in charge by the regular teacher, who should then be assisted at roll-call and in clerical work by one of the special teachers. The alternative plan is to have groups meet for roll-call and dismissal in the different rooms of the building, including the gymnasium. It is then possible to divide impartially among all the teachers the responsibility for record-keeping. In the writer's opinion, this latter method gives better administrative results. It also equalizes this sort of work between the regular and special teachers.

#### SIZE OF CLASSES

One of the most difficult problems is to determine how many children shall be admitted to the double groups. If a city has as many pupils

as 48 in each room, the doubling process charges each teacher with the care of 96 children. No one can endorse such an arrangement, although it seems to be true that the care of 96 pupils under the platoon plan is no heavier an overload for the teacher than that of 48 under the old plan. Forty ought to be the maximum number under the standard plan and 80 can be placed in the double groups of the platoon plan without hardship for teacher or pupils. Groups of from 70 to 75 will give still better results. The new arrangement frequently brings to the regular teacher two groups or classes of the same grade. But occasionally a half-day group will combine two sets of pupils from adjacent half grades; as, for example, the last half of the third and the first half of the fourth grade, so that one teacher will be giving instruction in three half-grades of the curriculum. While this should be avoided, especially in the upper grades, it presents no greater difficulty than might arise from the same problem under ordinary conditions.

#### PLAYGROUND WORK AND EQUIPMENT

If efficient instructors in physical training are secured, the use of the playground will easily work itself out. But the principal can greatly help here through the adjustment of groups and

playground space so that no portion of the building will be exposed to undue annoyance during warm weather when windows are open. A large, well-equipped playground is an advantage, though excellent results may be secured even in restricted yards and with little apparatus.

There is now an abundance of group games available for children from five to 15 years of age. The rhythmic games and the competitive ones, like pass-ball, volley-ball, and kickety-kick, never lose their charm and require little in the way of apparatus. Sand boxes, teeters, and swings are provided at slight expense. It is unwise to invest much money in heavier apparatus unless the ground is to be a center for community use and to have afternoon and evening supervision. This subject is treated in greater detail in the Survey Report entitled, "Education through Recreation."

Physical training instructors should have a longer day and receive higher pay than classroom teachers. They should supervise the playgrounds before and after school and, when possible, arrangements should be made to have them there on Saturday morning. Noise on the playground during the session will at first cause some complaint from other teachers, but tactful care on the part of playground instructors will reduce the noise and the shifting of activities

to different parts of the playground will reduce the complaints. The refreshing and stimulating value of outdoor play on the other lines of work will soon atone for the noise except in the view of a few case-hardened complainants.

### NOT A DEPARTMENTAL PLAN

It is likely that the platoon plan will be opposed by those who have objections to "departmentalizing the lower grades." It is not a departmental plan. It might, with some justice, be described as semi-departmental, but on the same basis the former single-room method might well be described as at least partially departmental. Most cities now have special instruction in music and art. In Michigan every city of 10,000 or over is required by law to give instruction in physical training, and many smaller places throughout the country are doing the same thing. In some places construction work in primary grades is put in charge of a manual training teacher. In larger places the different rooms are often visited alternately by supervisor and assistant. Thus even in the first grade pupils must become acquainted with from three to six instructors besides the regular teacher who project themselves into the daily program "for



instruction, admonition, or reproof" at various intervals throughout the month.

The truth is that the enrichment of courses of study has left the conventional methods of school administration overloaded pedagogically as well as cumbersome in administration. The platoon plan is simpler in administration and more efficient in concentrating energy than many of the grade organizations which it replaces. It is not departmental in the sense in which that term is applied to the junior high school and to similar arrangements in the upper grammar grades. Yet it has enough similar features to make the transition from sixth to seventh grade, for instance, more natural and a less unsettling procedure than has been the transition from the traditional eighth grade to the high school.

As to the difficulties from divided energy or attention which some have feared, one can simply say that in practice they have not arisen in the everyday use of the plan. The whole atmosphere of the schools working in this new way reflects comfort and effectiveness.

## CHAPTER V

### COSTS

There are five factors which must be considered in comparing the cost of running a school in the conventional way with the cost of operating the same school after it has been reorganized on the platoon plan. These five factors are expense of equipment, supplies, teaching, supervision, and building space. The first two of these five factors involve relatively slight changes in expense and may well be considered together.

#### EQUIPMENT AND SUPPLIES

If one were to equip a new school with the purpose of operating it on the platoon plan, the equipment would cost only slightly more than standard equipment. There would be additional accommodations for children's wraps and boxes or lockers for caring for the children's books. Equipping the special rooms with seats of different sizes and styles might be slightly more expensive than furnishing them with the stand-

ard seating arrangement. These costs become somewhat more serious when an existing school is reorganized and equipment supplied for administering it by the platoon plan.

As has already been stated in Chapter IV, it will generally be found that all necessary alterations may be made in a 10 or 12 room building at a cost not in excess of \$1000. The equipment of special rooms, such as the music and art rooms, will be found to be less expensive than such equipment usually is when scattered through eight or 10 rooms in the same building. Moreover, the results are far superior. The expense for supplies may vary greatly according to the methods used in different plans of work, but compared with the other cost items this is almost negligible and will be found substantially the same under both plans of administration.

#### TEACHING COSTS

In general approximately two-thirds of the expense of operation and maintenance in a school system is that for teachers' salaries. The fundamental idea of the platoon plan is to divide all the children into two platoons, consisting of equal numbers of classes and to have one group engage in special work while the other group engages in regular work. This rearrangement

provides for the use of all parts of the building all the time, and it further provides for more efficient work in the special branches. It is clear, however, that the economies thus effected are the indirect ones of increased efficiency of instruction and the direct ones of saving in the use of building space. The use of the plan does not necessarily involve any direct economies in teachers' salaries.

If there are 40 pupils per teacher under the old plan and the same number under the new one, no saving in the pay-roll will result. Unless less expensive teachers are employed for some part of the work, there are only two ways in which direct economies in teachers' salaries can be effected. The first and most important is to have two groups on the playground in charge of one teacher. If the playground is well arranged and if there are good playroom accommodations for use in inclement weather, this doubling of the play groups is frequently possible. This is especially true in the case of the lower grades, where it is not always necessary to divide the boys and girls into separate groups for playground games.

Let us suppose that we have a 10-room building with a playroom and an auditorium. Under the old plan of administration, this building accommodates 10 classes, of which two are first

grades and will not enter into the reorganization. This leaves eight regular classes, and when the school is reorganized on the platoon plan, the auditorium and playroom are in continuous use and two more classes are enrolled, making a total of 10 classes on the platoon plan. Five of these classes are constantly engaged in regular work in the regular rooms and five others in special work in special rooms. Normally these 10 classes require 10 teachers. At any given time two of them are engaged in playground or playroom work under the guidance of two play teachers.

If these play groups are doubled during one session, one teacher will do the work of two teachers during half of the day, and half of the time of one teacher will be saved. This teacher would then spend the other half of the day at another school under a similar arrangement. If all the play groups were doubled, the entire time of one teacher would be saved. These different possibilities mean that the teaching of 10 classes of children may be done by 10 teachers, by nine and a half teachers, or by nine teachers, depending on the arrangement adopted.

In a similar way it is possible to group two classes in the auditorium for literature work or other work. When this is done, the time of one teacher is saved. This is the second method of

saving on teachers' salaries which was referred to above.

✓ These computations as to possible economies in teachers' salaries have been presented because these adjustments have been successfully made in existing systems and because it is well to consider carefully every possible economy. It should be emphatically stated, however, that it is educationally unwise to endeavor to make large financial economies through increasing the number of children cared for by each teacher. The doubling of groups is possible on the playground, in the playroom, or in the auditorium. But it is educationally undesirable if the groups are so large that the effectiveness of the work is reduced. The truest economies effected through the platoon plan are frequently those that are made by leaving the number of children in the school building unchanged, but reducing the size of classes by redistributing the children in smaller groups. Thus in the case of the school used above as an illustration, eight of the original 10 classes were reorganized on the platoon plan and two new classes added through the saving of space which resulted when the auditorium and playroom were used continuously. If these eight classes had consisted of an average of 45 pupils each, it would be possible under the new plan to reduce them to an average of 36 pupils

each. This would involve the employment of two additional teachers, but it would not require the construction of additional school-rooms. It would probably be a far more economical procedure from an educational point of view to reduce the classes from 45 each to 36 each than it would to add two new classes.

### SUPERVISION

Economies in the cost of supervision under the platoon plan are of both the direct sort, resulting through decreased expenditures, and of the indirect sort, resulting from increased efficiency. Since the supervisors of special subjects look after work done by specialists in a few rooms instead of having to oversee work done by all the teachers in all the classrooms, their supervisory task is far less complicated and much less time is spent in the non-productive procedure of going from one place to another. This is because the number of rooms in which special work in a given subject is done under the platoon plan is only slightly more than one-tenth of the number which must be supervised under the old plan. The resulting economies in the supervision of the special subjects have been found to be really important. For example, the salary list for supervisors of special subjects in Kala-

mazoo for the school year 1915-16 amounts to \$8,670, but two-thirds of these supervisors act as instructors during a part of the time and the actual cost charged to supervision is a little less than \$5,300. This school system had the same number of supervisors of special subjects under the old plan. Hence there is a saving in actual cost of supervision of \$3,370, or a reduction of 38 per cent from the former figure.

#### BUILDING SPACE

Economies in building space are by far the most important financial economies resulting from the platoon plan. In the case of the building used as an illustration, a 10-room school with auditorium and playroom has been made to accommodate 12 classes. This is a saving of two classrooms, or an increase of 20 per cent without a new building investment. If we include the cost of land and equipment, accommodations for each class in a modern school in a city like Cleveland involve an investment of \$10,000. In the case of the school mentioned, this means a saving of \$20,000 for the two rooms. If the school buildings of a city are unprovided with special rooms, these savings cannot be effected. If the city is generously provided with special rooms in its school buildings, the savings will be



proportionately larger. In practice it is found that these direct savings are not likely to fall below 15 per cent and will seldom go above 35 per cent.

## CHAPTER VI

### BUILDING PROBLEMS OF CLEVELAND

The situation with respect to school buildings in Cleveland, like that in most large cities, may be described as composite. Old buildings, now almost obsolete, are still in use. Middle-aged buildings, excellent in their day, but with restricted accommodations, house thousands of children. First-class new buildings of recent construction and the most generous accommodations are sprinkled throughout the city. It is the unanimous opinion of all who have dealt with those portions of the Cleveland Survey that are concerned with the buildings that Cleveland's schools average better in construction, convenience, educational facilities, and up-keep than those of most large cities. This is especially true of the buildings constructed under the direction of the present business administration of the schools. Much has been done also in bringing the equipment of old buildings fairly well up to date. This entire subject is discussed more fully in the Survey Report entitled, "School Buildings and Equipment."

In the 1915 directory of the Board of Education 105 schools are listed outside of special schools. In these are 30 manual training and domestic science centers, 91 auditoriums and halls, 80 dispensaries, 43 gymnasiums, 48 shower baths, and two swimming-pools. All of these facilities are being constantly increased through the construction of new buildings. While only a few of the playgrounds are large, most of them are larger than the usual city school yards. They are well drained and most of them have been resurfaced either with gravel or with a layer of fine crushed stone. Twenty-five of them have playground equipment, but the usable and movable parts of this equipment are stored away during the school year and brought out only during summer vacations.

These facilities are of large potential educational value. They are exceedingly expensive and if they are not regularly used, they constitute an unprofitable investment. In Cleveland the use of these facilities has not been fully developed. Among the buildings visited by the writer, there were three which had fine basement playrooms for boys and girls. In one they were used as gathering places before sessions; in another, one room had been taken for sewing classes and the other for an evening club of boys; in the third they were not used at all

except for storing surplus desks and a lawnmower.

The playgrounds were bare and silent except at recess. Perhaps they were kept bare in order to insure silence. Several excellent gymnasiums were visited. Only two were found in use and in only one building did both room and program give evidence that the different classes secured systematic opportunities to use the gymnasiums. In several buildings, because of crowding, the auditoriums were used for one or more overflow classes which precluded any other use. But in none of the buildings visited was anything but occasional use planned for auditoriums, though several buildings had good arrangements for such occasional use. The writer visited school buildings steadily for 10 days without finding any auditorium actually in use except as an overflow room.

#### BUILDING SITUATION GROWING ACUTE

Two conditions common in large cities are now making Cleveland's building situation acute. No resident needs to be told at this time of the critical situation with regard to school funds. It is sufficient to say that a combination of restrictive tax legislation, a low local valuation, and the rapid school building program of the

past few years have produced a situation which seems to elude all hope of securing adequate funds for erecting needed buildings within the next few years.

The second condition is that of rapid growth, together with congestion of population in unexpected places. This has made new buildings inadequate and necessitated such makeshifts as relays within regular buildings, part-time classes, the erection of temporary buildings, and the renting of emergency quarters. All of these devices are used in Cleveland and in some cases, as at Memorial Schools, all of them are in use simultaneously.

In so far as the platoon plan results in a saving of space or provides for the more efficient use of available space, there is an opportunity in Cleveland to secure from it valuable immediate results. This opportunity is so real and the need so manifest that a word of caution is in order. The platoon plan should be administered for the purpose of securing improved educational results and not simply as an economical device to save room. The crowding that steadily forces problems of accommodation on the Cleveland school authorities carries with it the constant tendency to stretch existing facilities.

Nevertheless this problem has been met with much skill. In several buildings the seating unit

is 48 and an occasional room enrolls 45 or more, but visits to several of the more crowded buildings showed that the average attendance there was slightly over 40. For the best results in teaching, this average should be reduced. The platoon plan is a cost-reducing plan under ordinary conditions. When enrollment steadily increases, there is naturally a temptation to push to their limit all administrative changes that show a saving in cost. The platoon plan, like other adjustments that result in economies, must be judged primarily on the basis of its educational value.

#### SPECIAL TEACHERS FOR THE PLATOON PLAN

In a large school system wide-spread adoption of the platoon plan involves a considerable rearrangement of the teaching force. This is the most important of several reasons which indicate the wisdom of a gradual and progressive adoption instead of a sudden one. Practically all the special teachers required can be developed from within the regular corps. The physical training teachers are possible exceptions to this rule. Teachers with grade experience whose special interests are in drawing or music or the literary side of reading become excellent special teachers if they have the re-

quisite sympathy and judgment to deal with children of several grades and ages.

Frequently good instructors in physical training may be developed in the same way from the regular corps though the number having the requisite preliminary training is not so large as in the other branches mentioned. In Cleveland, however, a good number should be found who could easily equip themselves for this work, for playground activities in this city have been well planned and are under skilled supervision. This work must have aroused the interest of many grade teachers and is giving as good results as can be hoped for under the present system of organization and supervision. Yet it is nearly certain that the supervisors of the work themselves would freely confess its inadequacy to fill the needs of the children. If, as is provided in buildings having the platoon plan, the present leaders can be given skilled assistants and generous allotments of time, Cleveland's work in physical training will soon be a model for other cities to follow.

#### **PRELIMINARY EXPERIMENTATION ESSENTIAL**

An immediate transfer of the whole system or of a large number of schools to the platoon plan without careful preliminary experimentation in a few chosen schools would surely prove dis-

| appointing if not disastrous. Sudden changes are perilous in any organization. Moreover, the administrative officials should have knowledge through local experience of the lines in which a change is likely to bring temporary difficulties. With a trial under principals ready to adjust themselves to new circumstances, and with teachers who can keep judgment and its expression in suspense until the new routine becomes familiar, it is believed that the platoon plan will be productive of most valuable results in the schools of Cleveland. It has within it possibilities of bettering conditions for each of the three "high contracting parties" of every school situation—the children, the teachers, and the tax-paying public.

During the progress of the School Survey, Cleveland has undertaken an experiment with the platoon plan in one of its largest schools. Ample provision has been made for equipment and personnel and the work has gone forward under most favorable auspices. At the time of publishing the present report the results of this experiment are most hopeful.





## CHAPTER VII

### SUMMARY

1. The problem of maintaining suitable housing conditions in a growing school system is persistent and always urgent. In Cleveland the problem is now acute both on the side of financial pressure and because of the fact that temporary accommodations are now in use for about 7500 pupils.

2. Within recent years efforts to secure better adjustment between buildings and curriculum have brought many experiments in the intensive use of the school plant. The best known of these newer plans for grade work is that in operation at Gary, Indiana. In order to increase building capacity, Superintendent Wirt has used the following methods in varying proportions:

- a. Shops, gymnasiums, and an auditorium are added to the school building; playgrounds and school gardens are provided outside.
- b. Through administrative readjustments all

special rooms as well as all classrooms are used throughout the school day.

- c. Several classes are accommodated simultaneously in auditoriums and gymnasiums.
- d. Different groups of children come to school at different hours.
- e. Libraries, churches, the Y. M. C. A., etc., are allied with the schools to the extent of caring for part of the children part of the time.

3. Gary is a new city. It was built with unusual rapidity in a new locality, and these innovations could be tried out without conflict with educational custom or traditions.

4. The true tests of these innovations are educational: numerical results must be regarded as secondary. The change most generally applicable in other localities and most likely to improve educational procedure and housing conditions is the development of the use of special rooms and equipment throughout the school day.

5. This development has been worked out in the platoon plan. Under this plan the subjects in the curriculum are divided into two groups which may be termed the fundamental or regular group and the auxiliary or special group. Each regular teacher takes charge of two groups of

pupils, having each for one-half of the school day. The regular teacher is relieved of responsibility for the special subjects. These are taught by special teachers who take charge of successive groups from different grades. In this way, both regular and special rooms are used steadily throughout the day.

6. The platoon plan aims to secure:

- a. Better instruction and improved results in special branches without sacrificing the fundamental subjects of the curriculum.
- b. The filling of important gaps in the present curriculum without the increase of cost that often prohibits such additions.
- c. A more constant use of the whole school plant and especially of facilities usually considered "extras," such as gymnasiums, auditoriums, and manual training rooms.
- d. A larger enrollment within the same building.

7. The methods used include:

- a. Rearrangements of the teaching force.
- b. A slight change of emphasis on teaching values.
- c. The increase of work in physical training and the arrangement for other lines of auxiliary work, such as music and drawing, in charge of special teachers.

- d. A new division of the daily time-schedule which may or may not involve lengthening of the school day.
  - e. Devices and equipment to facilitate more intensive use of individual rooms.
8. The plan may be made operative in all grades from the first to the eighth, or in upper grades only, according to local situation and needs. Where the methods of first grade work have been modified by kindergarten influence, that grade may wisely be left under individual teachers.
9. A grade room is required for each double group of classes. Each class occupies this room during half of the school day. Enough special rooms and occupations must be provided to accommodate one-half of the classes throughout the day.
10. These accommodations will include gymnasiums, playrooms, auditoriums, and special rooms for music, art, literature, manual training, domestic science, library work, or such other subjects as the local authorities wish to emphasize. From the nature of some of these occupations, and because classes are in these rooms for short periods, rooms hitherto unavailable for regular use—such as ground-floor rooms—may be utilized, while special rooms previously saved for occasional classes may be used through the entire session.

11. The platoon plan concentrates preparation, effort, and attention for both pupil and teacher.

12. The platoon plan does not change to any considerable extent the conditions of dividing pupils into recitation divisions for the regular rooms, nor does it necessarily involve a longer school day. Each of these factors is to be settled, not as a necessary part of this plan, but on the basis of the educational advantages to be secured by one procedure rather than another.

13. Rearrangement of the time-schedule involves only slight variation in the amount of time given to regular subjects. Three factors help to secure this result:

- a. Transfer of a part of the regular subjects from the regular rooms to the special rooms.
- b. Absorption of recesses into the time allotted for physical training.
- c. Alternation of certain subjects, such as music and drawing. On a two-weeks' schedule these subjects can be given a fair allotment of time and a period long enough to secure definite results in each recitation.

14. The readjustment of time divisions gives pupils a day of more variety and interest. Practical experience does not show the scatter-

ing of effort that is sometimes feared. Supervision is concentrated and reduced with good effect.

15. Two consecutive half-grades will usually occupy a grade room. Hence practically no change in seating arrangement is needed in regular rooms. Equipment, such as lockers or boxes, must be added to insure a separate storing place for the books of each pupil. In the special rooms desks or chairs of two or three sizes must be provided. For the literature and music rooms movable furniture is preferable.

16. Five factors must be considered in comparing the cost of running a school in the conventional way with the cost of operating the same school after it has been reorganized on the platoon plan. These five factors are expense of equipment, supplies, teaching, supervision, and building space.

17. The expense of altering the equipment of an old building preparatory to installing the platoon plan will seldom exceed \$1000. The cost of supplies under the platoon plan is somewhat less than under the ordinary plan.

18. Teaching costs under the platoon plan will be the same as under the old plan if the size of classes remains unchanged. If playground groups are doubled, the teaching cost will be reduced.

19. Economies in the cost of supervision under the platoon plan are of both the direct sort, resulting through decreased expenditures, and of the indirect sort, resulting from increased efficiency.

20. The actual amount of room saved and the consequent saving of investment cost in buildings of from 10 to 24 rooms will vary from 15 per cent to 35 per cent according to the construction of the building and the application of standards of distribution of pupils in classes. The smaller saving may sometimes reflect truer economy from the educational point of view.

21. The saving in investment justifies liberal provision for the equipment needed to meet changed conditions. Four sorts of equipment are essential. These are equipment for comfortable seating, care of wraps, storage of books, and for an adequate signal system. Failure to prepare for these needs will jeopardize any experiment with the platoon plan, since small centers of friction may easily defeat the application of good methods.

22. The responsibility for keeping attendance and class records of double groups should be apportioned between regular and special teachers.

✓ 23. The most difficult problem is to determine the number of pupils to be assigned to double groups. From 70 to 75 as an average will result



